蝶と蛾 *Tyô to Ga*, **41** (2): 113－128, 1990

Notes on *Aletia radiata* (BREMER) and Its Allies, with Descriptions of Two New Species (Lepidoptera, Noctuidae)

Shin-ichi YOSHIMATSU

Laboratory of Insect Systematics, National Institute of Agro-Environmental Sciences, Kannondai 3-1-1 Tsukuba, Ibaraki 305, Japan

Abstract The status of *Aletia radiata* (BREMER) and its related species are discussed. Two new species are described from the Philippines. *A. radiata* (BREMER) and *A. moorei* (SWINHOE) are considered two distinct species widely distributed in Asia. A comment is given to the taxonomic value of coronal spines in the male genitalia as used currently in grouping the *Leucania*-complex.

Key words Noctuidae, *Aletia radiata*, *Aletia moorei*, distribution, male genitalia, female genitalia.

Introduction

Four species-group names have been involved with *Aletia radiata* (BREMER) and its allied species. Those are *Leucania radiata* BREMER, 1861, *Leucania abdominalis* MOORE 1881, *Leucania moorei* SWINHOE, 1902 and *Borolia stellata* HAMPSON, 1905. *L. moorei* is a replacement name for *L. abdominalis* MOORE, because the latter was once considered to be preoccupied by *Nonagria abdominalis* WALKER, 1956. CALORA (1966) recognized the name *abdominalis* MOORE as valid under the genus *Aletia* and applied it to a Philippine species.

Leucania radiata was described from Ussuri by BREMER (1861). HAMPSON (1905) described *Borolia stellata* from Japan, discriminating it from *Borolia radiata* (BREMER) which he recorded from Ussuri (S.E. Siberia) and Japan. INOUE & SUGI (1958) treated *stellata* as a subspecies of *Aletia radiata*. SUGI (1982) also considered *Aletia radiata stellata* to be found only in Japan.

LEECH (1900) treated *L. abdominalis* MOORE as a synonym of *L. radiata* BREMER, stating that there was little doubt regarding this synonymy.

WARREN (in SEITZ, 1913) considered *Sideridis moorei* (SWINHOE) to be a widely distributed species, occurring in the Punjab, Bengal, Sikkim, Assam, the Niligiris, Ceylon, Formosa, the Malay Peninsula, N. Luzon, St. Aignan, N. Guinea, and Queensland.

Regarding *abdominalis* MOORE, *moorei* SWINHOE and *stellata* HAMPSON as synonyms of *radiata* BREMER, HOLLOWAY (1989) recorded *radiata* from Manchuria, Japan, Indian Subregion to Sundaland, Philippines and Sulawesi.

In the following lines *Aletia radiata* (BREMER) and *A. moorei* (SWINHOE) will be treated as two distinct species. Presently they are distinguished from each other only

by the characteristics of male genitalia.

While investigating the aforementioned species I discovered two other closely related species from the Philippines. One is readily distinguished from *A. radiata* and *A. moorei* superficially while the other is quite difficult. CALORA (1966) treated the latter as *Aletia abdominalis* (MOORE).

In this paper I describe the external characters and the male and female genitalia of *A. radiata*, *A. moorei* and two new species and give their known distribution.

Aletia radiata (BREMER)
(Figs. 1, 5 A－D, 6 A, B)

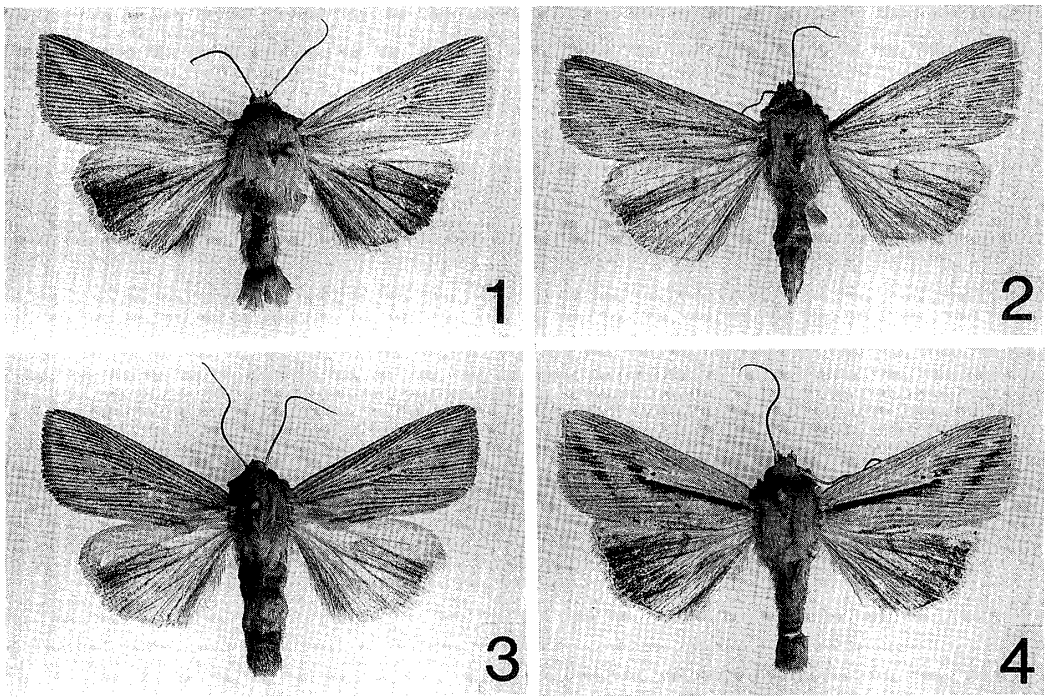
Leucania radiata BREMER, 1861, *Bull. Acad. imp. Sci. St. Petersb.* **3**: 484－485.
Leucania radiata: BREMER, 1864, *Mem. Acad. Sci. St. Petersb.* (7)8 (1): 48, pl. v, fig.8.
Borolia stellata HAMPSON, 1905, *Cat. Lep. Phal. B. M.* **5**: 565, pl. 94, fig. 30. **Syn. nov.**
Sideridis stellata: WARREN, 1910, *In* SEITZ, *Macrolepid. World* **3**: 100, pl. 24 c.
Sideridis radiata: WARREN, 1910, *In* SEITZ, *Macrolepid. World* **3**: 100, pl. 25 f.
Aletia radiata stellata: INOUE & SUGI, 1958, *Check List of the Lepid. Japan* **5**: 471－472.
Aletia radiata stellata: SUGI, 1982, *In* INOUE, H. *et al.*, *Moths of Japan* **1**: 717, **2**: 358, pl. 177: 10.
Aletia radiata: POOLE, 1989, *Lep. Cat.* (New Series) **118** Noctuidae. Part 1: 65.
Aletia stellata: POOLE, 1989, *Lep. Cat.* (New Series) **118** Noctuidae. Part 1: 65.

Length of forewing. 12.2－16.9 mm, av. 14.3 mm.

Male. Thorax and vertex ochreous white; tegula ochreous white with several spatulate fuscous-tipped scales along inner side, and brownish along outer side. Abdomen ochreous white, tinged with fuscous. Forewing ochreous, tinged with yellow, the veins ochreous white; subbasal line represented by a black spot on costa; antemedial line usually represented by black spots on costa, between veins 1 and 2; a fuscous brown fascia below median nervure, a white streak on median nervure, slightly hooked on discocellulars with a small black spot just proximal of the hook, beyond which is slightly fuscous brown; postmedial line usually represented by a black spot below vein 1 and a few black spots on veins; a slightly fuscous triangular shade from termen below apex; terminal line represented by black spots on interspaces; cilia ochreous white. Underside of forewing ochreous white, entire costal area scattered with fuscous scales; fuscous fascia from veins 9 to 12 medially, median nervure slightly fuscous; postmedial line represented by a black spot on costa and often by black spots on veins; terminal line represented by black spots on interspaces; cilia ochreous. Hindwing fuscous, costal area ochreous white; terminal line represented by black spots on interspaces; cilia ochreous white. Underside of hindwing ochreous white; discoidal cell fuscous; postmedial line represented by black spots on interspaces; cilia ochreous white.

Female. Similar to male.

Male external genitalia: Tegumen slender in lateral view; vinculum with moderately broad central portion; saccus moderately large. Uncus long, slender and falcate with hairs beyond the middle. Valva except cucullus with rounded ventral margin;



Figs. 1－4. Adults of *Aletia* spp. 1. *A. radiata* (BREMER); 2. *A. moorei* (SWINHOE); 3. *A. honeyi* sp. nov; 4. *A. intermediata* sp. nov.

costa gradually curved dorsally; editum moderately large and produced ventrally with many hairs; ampulla long, subbasal portion strongly curved ventrally, distal half of ampulla running along the posterior margin of valvula; sacculus moderately broad, its dorsoposterior portion abruptly produced; harpe moderately long, slightly rounded and buldging ventroposteriorly, dorsal process of harpe short and thick; valvula moderately broad with narrow membranous area and a few spines along ventral margin; cucullus small with densely diffused coronal spines and a few long spines marginally, and its basal arm long and strongly curved ventrally. Juxta with slightly concaved anterior and posterior margin and rounded lateral margin. Phallus unmodified; vesica moderately long, about 1.2 times as long as aedeagus when everted, bulging in distal half, bearing dense spinules on entire surface of distal half, slender spines on distal portion and a large spine at distal end.

Female terminalia and genitalia: Seventh abdominal tergum and sternum unmodified. Eighth abdominal tergum unmodified; apophysis anterioris moderately long. Ductus bursae sclerotized and almost straight; ostium bursae unmodified. Ductus seminalis moderately long. Corpus bursae rounded; cervix bursae short, membranous, rounded and tapering toward ductus seminalis. Papilla analis unmodified; apophysis posterioris long.

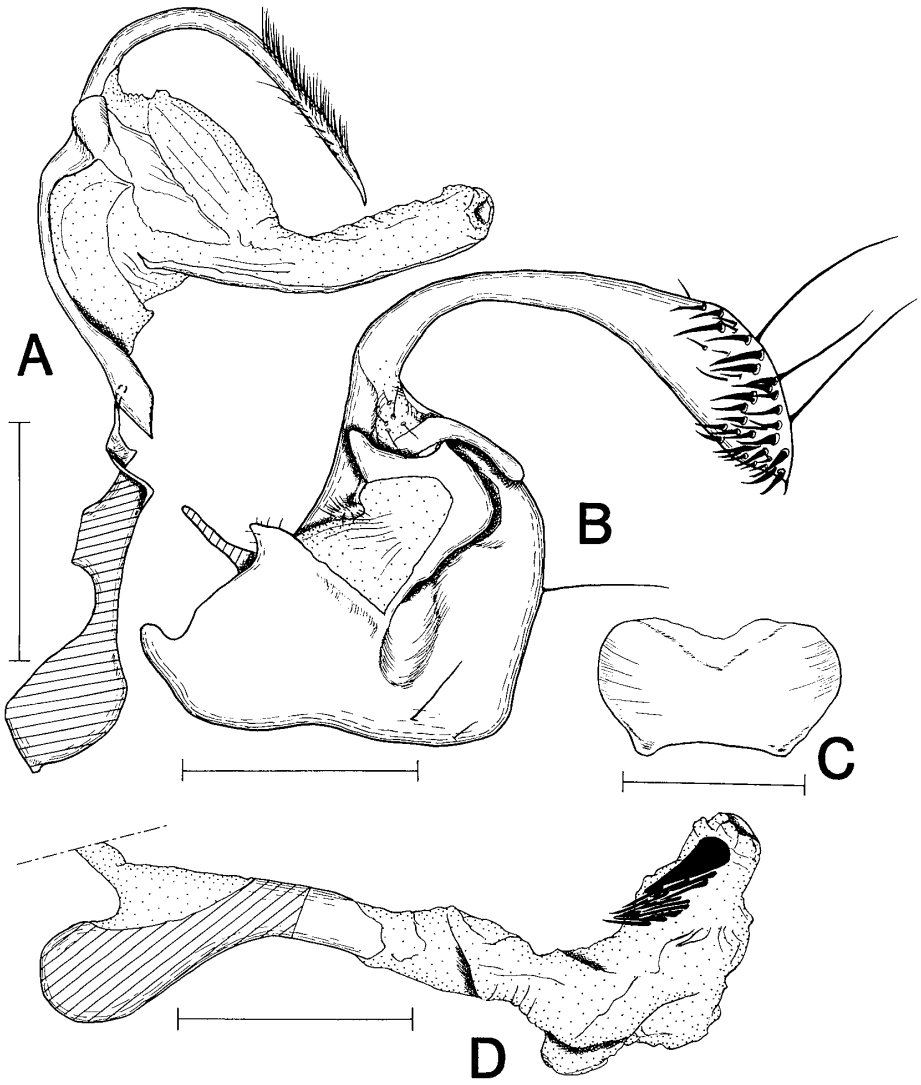


Fig. 5. Male genitalia of *A. radiata* (BREMER). A. Ring in lateral view; B. Right valva in inner view; C. Juxta; D. Phallus in lateral view. Scales: A, B & D. 1 mm; C. 0.5 mm.

Specimens examined: [Japan] (Honshu) 1♂, Nanakurasawa, Omachi-shi, Nagano Pref., 3. vii. 1982, Y. YOSHIDA & S. YOSHIMATSU; 1♀, Kitamata, Mt. Hakubadake, Kitaazumi-gun, Nagano Pref., 7. vii. 1982, Y. YOSHIDA & S. YOSHIMATSU; 1♂, Bandokoro, Norikura-kogen, Minamiazumi-gun, Nagano Pref., 8. vii. 1982, S. YOSHIMATSU; 1♀, Daisenji, Mt. Daisen, Tottori Pref., 29. v. 1983, S. YOSHIMATSU, K. KONISHI & Y. YOSHIDA; 1♂ 2♀, same locality, 30. v. 1983, S. YOSHIMATSU, K. KONISHI & Y. YOSHIDA; 1♂, Mt. Hyonosen, Sekinomiya-cho, Hyogo Pref., 31. v. 1983, S. YOSHIMATSU, K. KONISHI & Y. YOSHIDA; 1♀, Oigo, Onsen-cho, Mikata-gun, Hyogo Pref., 10. viii. 1982, Y. YOSHIDA & S. YOSHIMATSU; 1♂ 1♀, Muraoka-cho, Mikata-gun, Hyogo Pref., 7. viii. 1983, S. YOSHIMATSU; 4♀, same locality, 8. viii. 1983, S. YOSHIMATSU; 1♂, Mt. Shinnyu-san, Togauchi-cho, Hiroshima Pref., 2. vi. 1983, S. YOSHIMATSU, K. KONISHI & Y. YOSHIDA. (Shikoku) 2♂, Ishizuchiyama, Omogokei, Ehime Pref., 26－27. v. 1969,

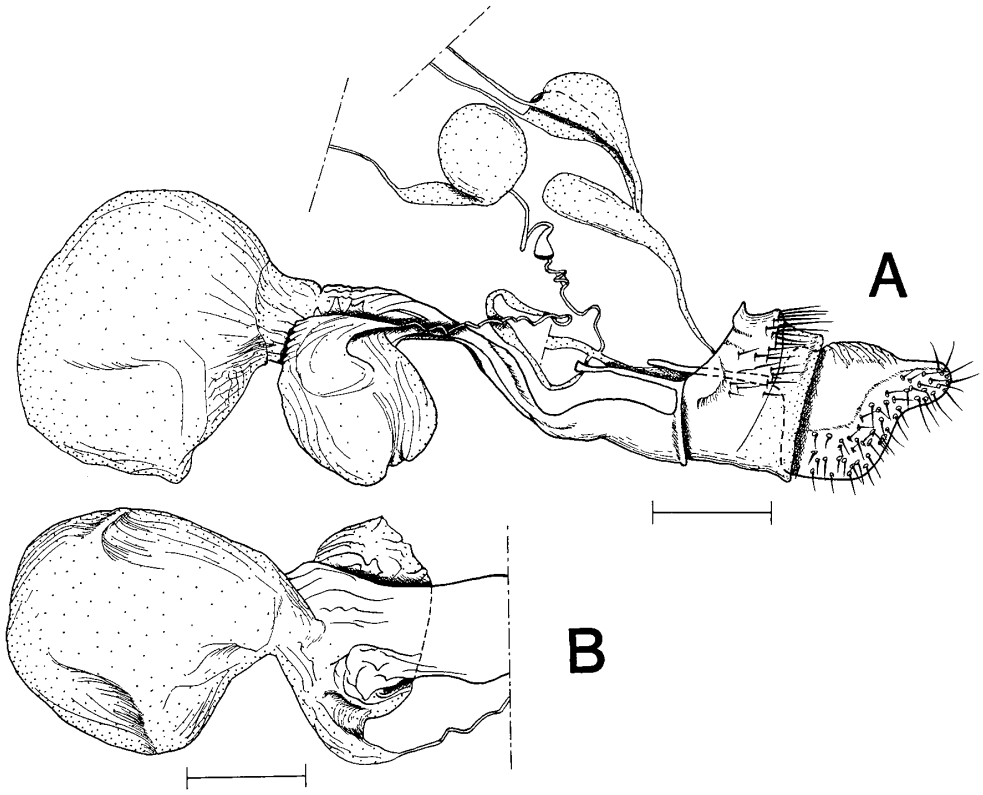


Fig. 6. Female genitalia of *A. radiata* (BREMER). A. Female whole genitalia in lateral view; B. Bursa in dorsal view. Scales 1 mm.

K. TANAKA. (Kyushu) 1♂, Mt. Hikosan, Fukuoka Pref., 1. vi. 1978, K. SETOYA; 1♀, same locality, 7－8. vii. 1978, M. HAYASHI; 1♀, same locality, 18－19. viii. 1983, N. KÔDA; 1♂, Mt. Sefuri, Fukuoka Pref., 15. vi. 1978, N. KÔDA *et al.*; 2♂ 1♀, Tsushima Is., Nagasaki Pref., 5. ix. 1973, collector unknown; 1♀, Mt. Oboshiyama, Tsushima Is., Nagasaki Pref., 2. vi. 1982, I. KANAZAWA & S. YOSHIMATSU; 2♀, Chojabaru, Kuju, Oita Pref., 6. vi. 1978, K. SETOYA; 2♂ 1♀, Yoshibu, Handa kogen, Oita Pref., 30. v. 1981, S. YOSHIMATSU; 1♂ 3♀, Yufuin, Oita Pref., 4. vii. 1981, S. YOSHIMATSU; 4♂, Mt. Kurodake, Mts. Kuju, Oita Pref., 17. v. 1982, N. KÔDA; 2♂ 1♀, same locality, 18. v. 1982, N. KÔDA; 4♂ 2♀, same locality, 2. ix. 1982, S. YOSHIMATSU & K. KONISHI *et al.*; 1♀ Mt. Hakucho-zan, Kumamoto Pref., 4. vi. 1979, N. KÔDA; 1♀, same locality, 5. vi. 1979, N. KÔDA; 1♂, same locality, 24. v. 1981, N. KÔDA; 3♂ 4♀, same locality, 13. v. 1983, N. KÔDA *et al.*; 1♂, same locality, 9. vii. 1983, N. KÔDA; 1♂, same locality, 26. viii. 1983, N. KÔDA & K. KONISHI; 1♂ 2♀, Mt. Okueyama, Miyazaki Pref., 2. vi. 1979, N. KÔDA; 4♂ 4♀, Miike, Takaharu-machi, Miyazaki Pref., 16. v. 1983, S. YOSHIMATSU & I. KANAZAWA; 2♂ 4♀, same locality, 17. v. 1983, S. YOSHIMATSU & I. KANAZAWA; 2♂, Okujusso, Okuchi City, Kagoshima Pref., 17. v. 1979, N. KÔDA; 1♂, Kurinodake-onsen, Kagoshima Pref., 12. iv. 1983, K. KONISHI & S. YOSHIMATSU. [Taiwan] 1♀, Mt. Shihtou-shan, Miaoli Hsien, 10, vi. 1975, K. UEDA & K. SETOYA; 1♀, same locality, 5－6. viii. 1983, I. KANAZAWA; 2♀, same locality, 8. v. 1984, S. YOSHIMATSU; 1♂, same locality, 9. v. 1984, S. YOSHIMATSU; 1♀, Lishan, Taichung Hsien, 26. vi. 1975, K. UEDA

& K. SETOYA; 1♂, Lushan-wenchuan, Nantou Hsien, 13. vi. 1975, K. UEDA & K. SETOYA; 5♂ 3♀, same locality, 14－15. viii. 1983, I. KANAZAWA; 4♂ 7♀, same locality, 15－16. viii. 1983, I. KANAZAWA; 1♂, same locality, 16－17. viii. 1983, I. KANAZAWA; 7♂ 5♀, Mt. Alishan, Chiai Hsien, 16. vi. 1975, K. UEDA & K. SETOYA; 4♂ 3♀, same locality, 17. vi. 1975, K. UEDA & K. SETOYA; 4♂ 1♀, same locality, 10－11. viii. 1983, I. KANAZAWA; 5♂ 1♀, same locality, 11－12. viii. 1983, I. KANAZAWA; 1♀, Fenchifu, Chiai Hsien, 18. vi. 1975, K. UEDA & K. SETOYA; 4♂ 1♀, same locality, 21. viii. 1977, S. TAKEDA; 1♀, same locality, 23. viii. 1977, S. TAKEDA; 1♀, same locality, 12－13. viii. 1983, I. KANAZAWA. [Korea] 2♂, 12. vii. 1977, K. YAMAGISHI; 4♀, 13. vii. 1977, K. YAMAGISHI. [China] 1♂, Linping, Pr. Kwangtung, iv. 1922, H. HÖNE; 1♂, Linping, Pr. Kwangtung, 1. iv. 1923, H. HÖNE; 1♂, Linping, Pr. Kwangtung, 6. xi. 1923, H. HÖNE; 1♀, Li-Kiang 2000m, Prov. Nord-Yuennan, 7. vii. 1934, H. HÖNE; 1♀, same locality, 4. viii. 1934, H. HÖNE; 1♀, Ost. Tien-mu-shan, Prov. Chekiang, 20. iv. 1931, H. HÖNE; 1♀, same locality, 24. iv. 1931, H. HÖNE; 1♀, same locality, 8. v. 1931, H. HÖNE; 2♀, same locality, 22. v. 1931, H. HÖNE; 1♀, West Tien-mu-shan, Prov. Chekiang, 30. iv. 1932, H. HÖNE; 1♂, Mokanshan, Prov. Chekiang, 11. viii. 1930, H. HÖNE; 1♂, Hoeng-shan, Prov. Hunnan, 8. v. 1933, H. HÖNE; 1♀, Tapaishan im Tsinlling, Sued-Shensi 1700m, 7. vii. 1936, H. HÖNE; 1♂, same locality, 10. vii. 1936, H. HÖNE; 1♀, Kuatun 2300m, Fukien, 12. iv. 1938, J. KLAPPERICH; 2♂, same locality, 19. iv. 1938, J. KLAPPERICH; 1♂, same locality, 21. iv. 1938, J. KLAPPERICH; 1♂, same locality, 17. v. 1938, J. KLAPPERICH; 2♂ 1♀, Kuling, vii. 1921, Weber. [U.S.S.R.] 3♂ 1♀, Primorye Territory, Kedroraja reservation (30 km SW Vladivostok), 6－12. vi. 1976, V.S. KONONENKO. [Nepal] 1♀, Kharikhola 1980m, Solukhumbu, Sagarmatha, 7. x. 1979, M. OWADA; 1♂ 2♀, Janakpur, Dolakha, Kabre 1760m, 17. x. 1979, M. OWADA. [Thailand] 1♀, Chiang Mai, Pakia, 23. vii. 1981, H. KUROKO, S. MORIUTI, Y. ARITA & Y. YOSHIYASU; 3♂ 1♀, Chiang Mai, Doi Inthanon 2571m, 2. xi. 1985, S. MORIUTI, T. SAITO & Y. ARITA; 15♂ 6♀, Chiang Mai, Doi Inthanon 1300m, 1 & 3. xi. 1985, S. MORIUTI, T. SAITO & Y. ARITA; 1♀, Chiang Mai, Doi Pakia, 1500m, 5－7. ix. 1987, S. MORIUTI, T. SAITO, Y. ARITA & Y. YOSHIYASU; 1♂, Chiang Mai, Doi Inthanon 1300m, 8－12. ix. 1987, S. MORIUTI, T. SAITO, Y. ARITA & Y. YOSHIYASU; 2♂ 2♀, Chiang Mai, Fang, Doi Angkhang 1350m, 10-12. ix. 1987, M. OWADA. [Pakistan] 1♂, Nathia Gali, North West Prov. 8000 ft., 18. vii. 1987, K. KAMIMURA, T. INAOKA, S. SHINONAGA & K. KANMIYA.

Distribution: Ussuri, Japan, China, Taiwan, Korea, Nepal, Thailand and Pakistan.

Remarks: SUGI (1982) noted that there were few morphological differences between *Borolia stellata* HAMPSON from Japan and *Leucania radiata* BREMER from S. E.Siberia. He treated the Japanese material as *A. radiata stellata* (HAMPSON).

I examined the holotype of *A. stellata* in the British Museum (Natural History). Dr. V.S. KONONENKO kindly informed me of the type depository of *A. radiata* and sent me specimens of *A. radiata* from the type locality. I conclude *A. stellata* (HAMPSON) to be a junior synonym of *A. radiata* (BREMER).

Aletia moorei (SWINHOE)
(Figs. 2, 7 A–D, 8 A, B)

Leucania abdominalis MOORE, 1881, *Proc. Zool. Soc. Lond.* **1881**: 338. Preoccupied by *Nonagria abdominalis* WALKER, 1856.

Leucania abdominalis: HAMPSON, 1894, *The Fauna of British India, including Ceylon and Burma.* Moths **2**: 273.

Leucania moorei SWINHOE, 1902, *Ann. Mag. Nat. Hist.* (7) **10**: 50. Replacement name for *Leucania abdominalis* MOORE, 1881.

Aletia stellata: HOLLOWAY, 1976, *Moths of Borneo with special reference to Mt. Kinabalu*: 9, fig.46, Kuala Lumpur.

Mythimna radiata: HOLLOWAY, 1989, *Malayan Nat. J.* **43**: 86–87, pl. 2, figs. 87 & 88.

Aletia moorei: POOLE, 1989, *Lep. Cat.* (New Series) **118** Noctuidae. Part 1: 64

Length of forewing. 12.4–15.2 mm, av. 13.8 mm.

Male. Similar to *radiata*.

Female. Similar to male.

Male external genitalia: Tegumen slender in lateral view; vinculum with moderately broad central portion; saccus small. Uncus long and slender with hairs beyond the middle. Valva except cucullus with rounded ventral margin; costa slightly curved; editum moderately large; ampulla long; sacculus moderately broad, its dorsoposterior portion slightly produced; harpe moderately long and produced posteriorly, dorsal process of harpe small; valvula moderately broad with narrow membranous area and a spine marginally; cucullus small and strongly produced ventrally with sparsely diffused coronal spines and several long spines marginally, and its basal arm long and strongly curved ventrally. Juxta almost rectangular. Phallus unmodified; vesica moderately long, about 1.3 times as long as aedeagus when everted; bulging in distal half, bearing dense spinules on entire surface of distal half, slender spines on distal portion and a large spine at distal end.

Female terminalia and genitalia: Similar to *radiata*.

Specimens examined: [India] 1♀ (Type), Bengal, MOORE Coll. (B.M. Noctuidae Genitalia Slide No. 3306); 2♂, West Bengal, Darjeeling 6 mile village 2050m, 25. iii. 1986, W. THOMAS; 2♀, West Bengal, Darjeeling, Ghoom 2200m, 27. iii. 1986, W. THOMAS. [Malaysia] 1♂, Tanah Rata near Cameron Highlands; 1♀, Taiping, Perak, 1. viii. 1973; 2♂ 9♀, Taiping, Perak, viii. 1973; 2♂ 5♀, Fraser's Hill, 28–29. vi. 1987, I. HATTORI, M. MIYAZAKI & S. YOSHIMATSU. [Indonesia] 6♂ 2♀, Berastagi, N. Sumatra, 27. iv–4. v. 1988, S. & A. SAITO; 1♂ 2♀, Mt. Sibayak II, N. Sumatra, 4. v. 1988, S. & A. SAITO.

Distribution: India, Malaysia, North Sumatra and North Borneo.

Remarks: SWINHOE (1902) proposed *moorei* as a replacement name for *Leucania abdominalis* MOORE, as he considered *Nonagria abdominalis* WALKER from Australia to be included in the genus *Leucania*. Even though the two species are now in separate genera, the name *moorei* must be retained under the Code (POOLE, 1989). This is because a junior secondary homonym replaced before 1961 is permanently invalid

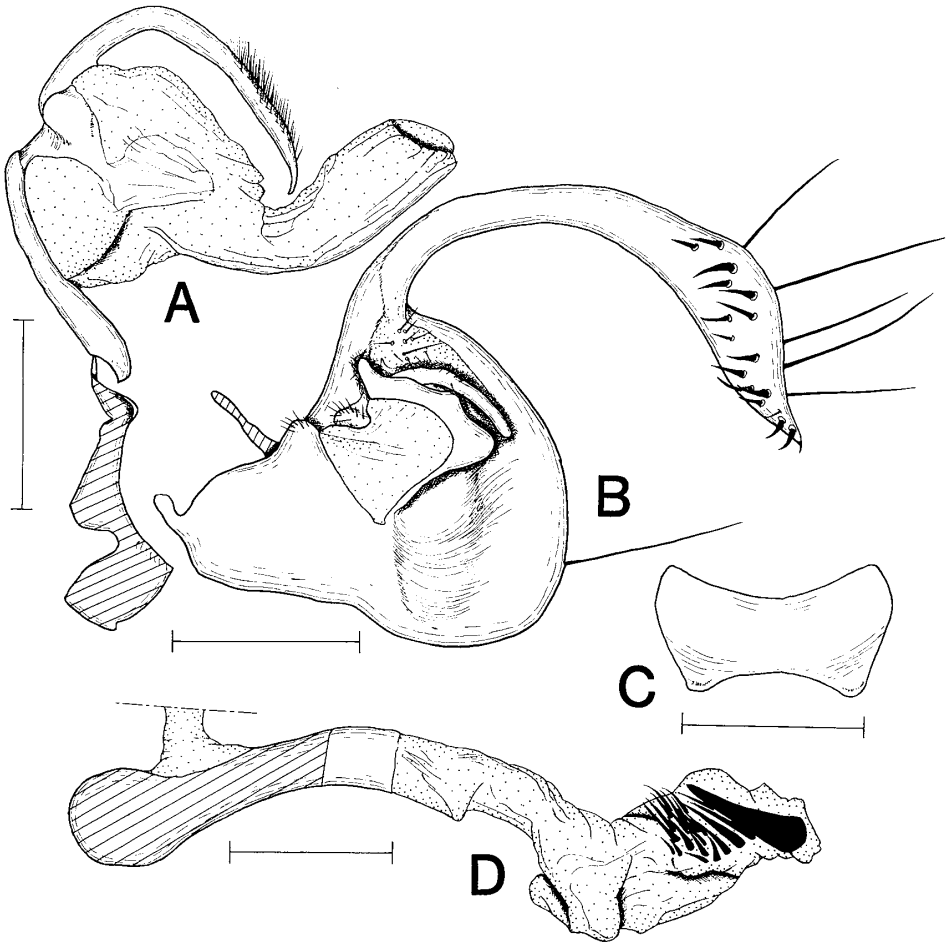


Fig. 7. Male genitalia of *A. moorei* (SWINHOE). A. Ring in lateral view; B. Right valva in inner view; C. Juxta; D. Phallus in lateral view. Scales: A, B & D. 1 mm; C. 0.5 mm.

(Article 59b), unless the case is presented to the Commission and they choose to decide otherwise for reasons of stability and universality.

Based on external morphology this species is very similar to *radiata*. After carfully examining the male and female genitalia of *A. moorei* from the type locality, I believe that *A. moorei* is a species distinct from *A. radiata*. They differ in that the cucullus of *A. moorei* has sparsely diffused coronal spines. The female genitalia of *A. moorei* are identical with those of *radiata* and it seems to be impossible to distinguish them using characteristics of the female genitalia. The figure of male genitalia which HOLLOWAY (1976) illustrated as *Aletia stellata* and the photographs of male genitalia of HOLLOWAY (1989) showed as *Mythimna radiata* appear to be this species, *A. moorei*.

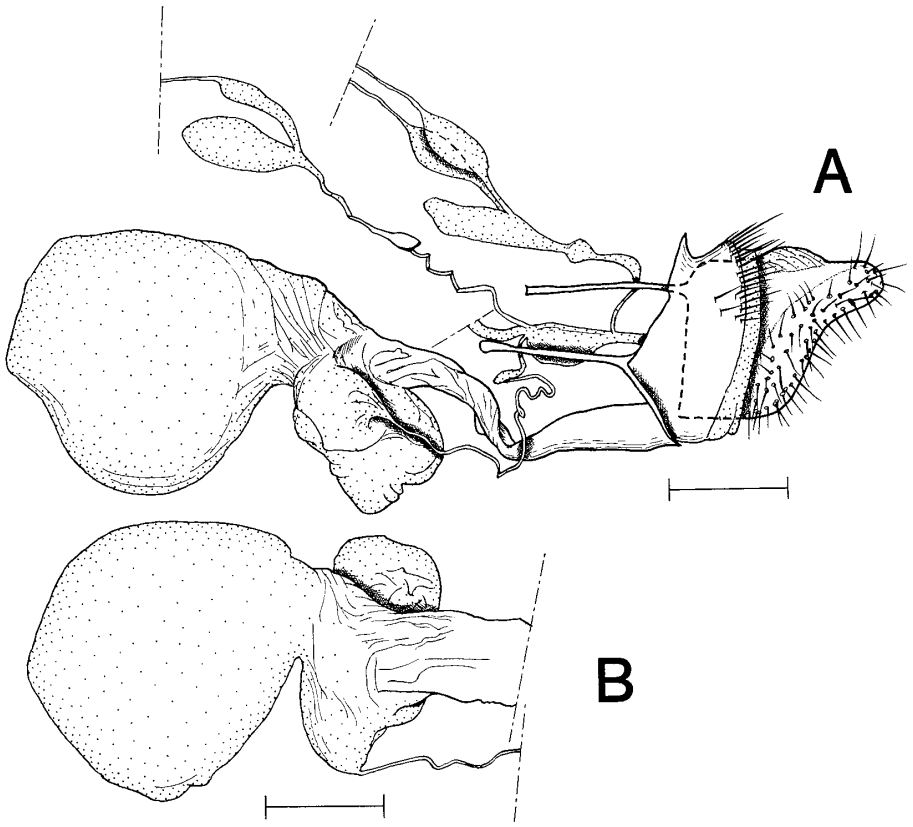


Fig. 8. Female genitalia of *A. moorei* (SWINHOE). A. Female whole genitalia in lateral view; B. Bursa in dorsal view. Scales 1 mm.

Aletia honeyi sp. nov.
(Figs. 3, 9 A–D, 10 A, B)

Aletia abdominalis: CALORA, 1966, *Philippine Agriculturist* **50**: 684–686, figs. 16, 46 & 75.

Length of forewing. 13.9–15.8 mm, av. 14.8 mm.

Male external genitalia: Tegumen moderately long and broad in lateral view; vinculum with slightly broad central portion; saccus small. Uncus moderately long and broad with many hairs beyond the middle. Valva except cucullus with rectangular ventral margin; costa curved dorsally on the distal half; editum moderately large; ampulla long; sacculus narrow and its dorsal margin waved; harpe moderately long, slightly produced ventroposteriorly, dorsal process of harpe short; valvula moderately broad with narrow membranous area and a long spine marginally; cucullus small and rounded with many densely diffused coronal spines and several long spines marginally, basal arm of cucullus long and strongly curved ventrally. Juxta almost rectangular. Phallus unmodified; vesica moderately long, about 1.5 times as long as aedeagus when everted, bulging at the middle, bearing dense spinules on entire surface of distal half, long slender spines on distal 1/3.

Female terminalia and genitalia: Seventh abdominal tergum and sternum un-

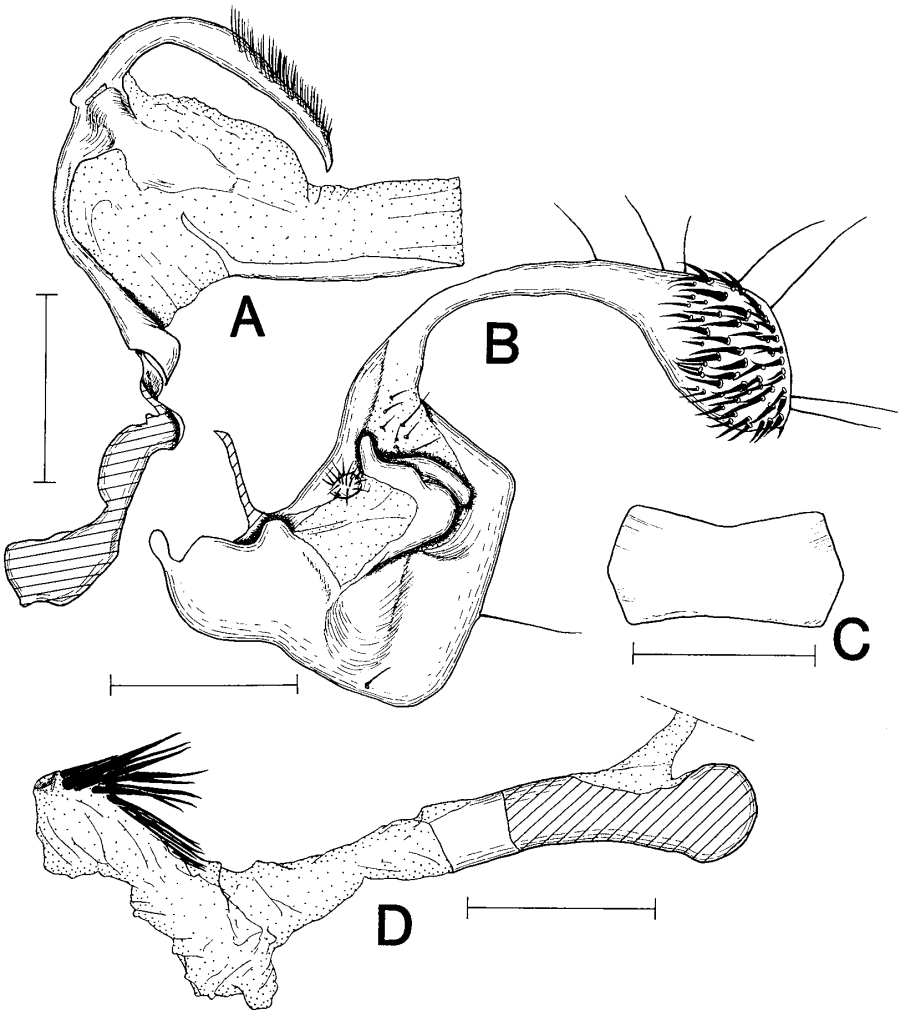


Fig. 9. Male genitalia of *A. honeyi* sp. nov. A. Ring in lateral view; B. Right valva in inner view; C. Juxta; D. Phallus in lateral view. Scales: A, B & D. 1 mm; C. 0.5 mm.

modified. Eighth abdominal tergum unmodified; apophysis anterioris moderately long. Ductus bursae sclerotized and almost straight; ostium bursae unmodified. Ductus seminalis moderately long and slightly bulging near distal end. Corpus bursae rounded; cervix bursae large and membranous. Papilla analis unmodified; apophysis posterioris long.

Holotype: ♂, Sayangan 2300m, Benguet Prov., North Luzon, 10. vii. 1985, M. OWADA

Type depository: National Science Museum, Tokyo.

Paratypes: 3♂ 1♀, same data as holotype; 8♂ 9♀, Mt. Data 2250m, Mountain Prov., North Luzon, 12－14. vii. 1985, M. OWADA; 1♂ 2♀, Mt. Puguis 1900m, Mountain Prov., North Luzon, 18. vii. 1985, M. OWADA; 4♀, Barlig 1550m, Mountain Prov., North Luzon, 17, 19. vii. 1985, M. OWADA; 2♂ 4♀, Sagada 1550m, Mountain Prov., North Luzon, 21－23. vii. 1985, M. OWADA; 4♂ 3♀, Mt. Data 2250m, Mountain Prov., North

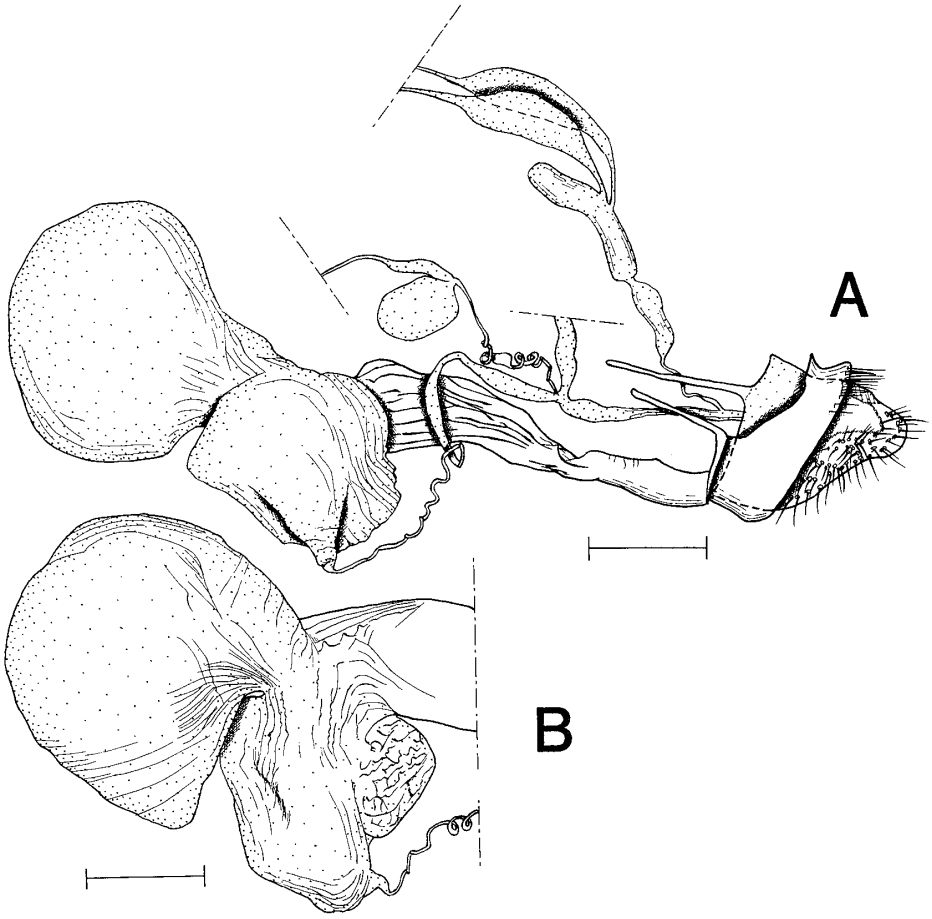


Fig. 10. Female genitalia of *A. honeyi* sp. nov. A. Female whole genitalia in lateral view; B. Bursa in dorsal view. Scales 1 mm.

Luzon, 24－26. vii. 1985, M. OWADA

Distribution: Luzon.

Remarks: Description of male and female of this species was already given by CALORA (1966). He applied the name *Aletia abdominalis* (MOORE) to this species, believing that it was a widely distributed species recorded in India, Ceylon, Formosa, the Malay Peninsula, the Philippines, New Guinea and as far south as Queensland.

A. moorei (SWINHOE) was described from Bengal by female specimen(s). Examination of the female genitalia of the type specimen of *A. moorei* (SWINHOE) in the British Museum (Natural History) revealed that *A. moorei* is different from this new species in the structure of the cervix bursae. This species is restricted to the Philippines as far as is known. The cucullus of *A. honeyi* has many diffused coronal spines as in *radiata* but the cucullus is broader than that of *A. radiata*. The cornuti of this species are represented by many long spines while those of *radiata* are represented by a large spine and many shorter spines.

The name of this new species is dedicated to Mr. M.R. HONEY of the British Museum (Natural History).

Aletia intermediata sp. nov.
(Figs. 4, 11 A – D, 12 A, B)

Length of forewing. 13.7 – 15.0 mm, av. 14.5 mm.

Male. Thorax and vertex ochreous white; tegula ochreous white with several spatulate fuscous-tipped scales. Abdomen ochreous white, tinged with fuscous. Forewing ochreous, tinged with yellow, the veins ochreous white, antemedial line represented by a black spot between veins 1 and 2; a distinct fuscous fascia below median nervure, a white streak on median nervure, hooked on discocellulars with a small black spot inside, beyond which is fuscous, postmedial line usually represented by black spots on veins and black patches between veins; a slightly fuscous triangular shade from termen below apex; terminal line represented by black spots on interspaces; cilia ochreous white. Underside of forewing ochreous white, entire costal area

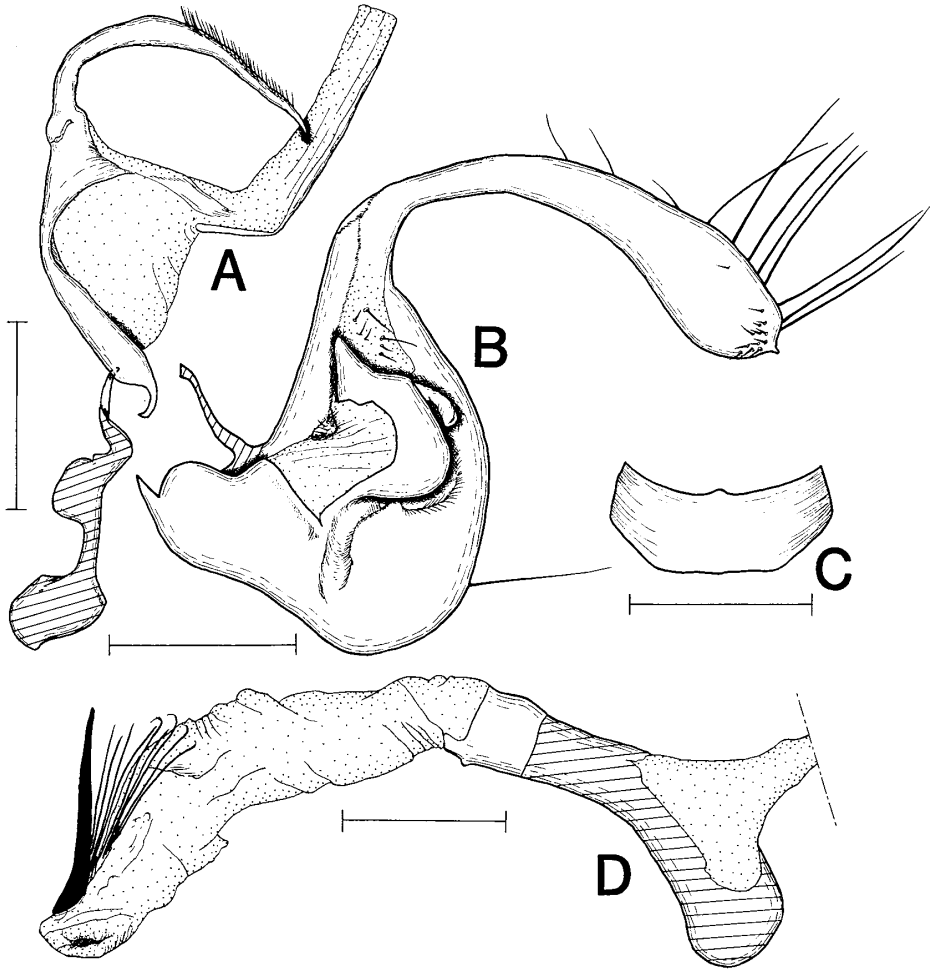


Fig. 11. Male genitalia of *A. intermediata* sp. nov. A. Ring in lateral view; B. Right valva in inner view; C. Juxta; D. Phallus in lateral view. Scales: A, B & D. 1 mm; C. 0.5 mm.

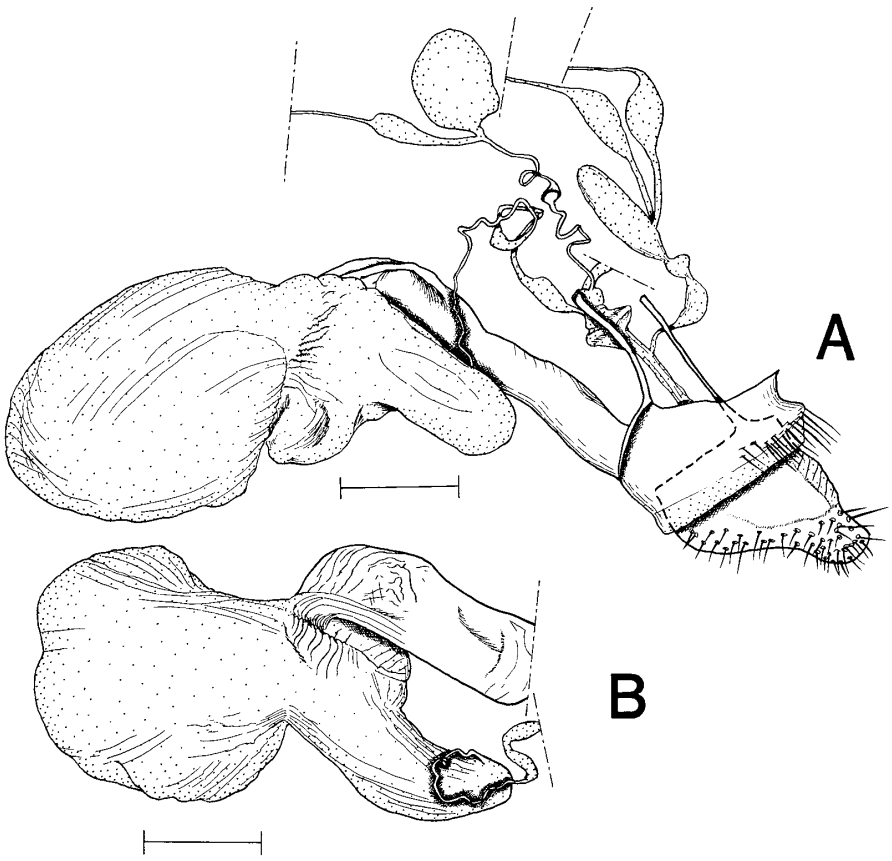


Fig. 12. Female genitalia of *A. intermediata* sp. nov. A. Female whole genitalia in lateral view; B. Bursa in dorsal view. Scales 1 mm.

scattered with fuscous scales; fuscous fascia from veins 9 to 12 medially; postmedial line presented by a black spot on costa; terminal line represented by black spots on interspaces; cilia ochreous white. Hindwing fuscous, costal area ochreous white; terminal line represented by black spots on interspaces; cilia ochreous white. Underside of hindwing ochreous white; discoidal cell fuscous; postmedial line represented by black spots on interspaces; cilia ochreous white.

Female. Similar to male.

Male external genitalia: Tegumen slender in lateral view; vinculum with moderately broad central portion; saccus small. Uncus long and slender with many hairs beyond the middle. Valva except cucullus with rounded ventral margin; costa almost straight; editum moderately large; ampulla long; sacculus narrow, dorsal margin waved; harpe moderately long, rounded and bulging ventroposteriorly, dorsal process of harpe short and thick; valvula moderately broad with narrow membranous area and a long spine marginally; cucullus small and rounded with several minute coronal spines ventroposteriorly and a several long spines marginally, basal arm of cucullus long and strongly curved ventrally. Juxta nearly U-shaped. Phallus unmodified; vesica moderately long, abous 1.3 times as long as aedeagus when everted, bearing dense spinules on entire surface of distal half, very slender long spines on distal portion and

a long large spine at distal end.

Female terminalia and genitalia: Seventh abdominal tergum and sternum unmodified. Eighth abdominal tergum unmodified; apophysis anterioris moderately long. Ductus bursae sclerotized and curved ventrally on anterior portion; ostium bursae unmodified. Ductus seminalis moderately long and slightly bulging near vagina. Corpus bursae rounded; cervix bursae tubular and membranous. Papilla analis unmodified; apophysis posterioris long.

Holotype: ♂, Mt. St. Tomas, Luzon, 17. i. 1985, collector unknown.

Type depository: Laboratory of Insect Systematics, National Institute of Agro-Environmental Sciences, Tsukuba.

Paratypes: 2♀, Mt. Data 2250 m, Mountain Prov., North Luzon, 12－14. vii. 1985, M. OWADA; 3♂ 1♀, Mt. Data 2250 m, Mountain Prov., North Luzon, 24－26. vii. 1985, M. OWADA.

Distribution: Luzon.

Remarks: This species has a remarkable black stria below median nervure. The cucullus of this species has only several minute coronal spines. The cervix bursae of this species is tubular but those of the other three species dealt with in this paper are rounded.

Discussion

Among moths of the *Leucania*-complex presence or absence of coronal spines has been used as a criterion to divide genera by many researchers. For example, the generic name *Leucania* was applied to a group not possessing coronal spines by CALORA (1966).

Aletia radiata and related species which are dealt with in this paper are characterized by the possession of a very small process at the distal end of the cucullus. *Aletia radiata* and *A. honeyi* have many coronal spines but *A. moorei* has fewer. *A. intermediata* has only several minute coronal spines. Apparently a reduction in the number of coronal spines has occured in the *radiata* group, independently of other lineages in the *Leucania*-complex. This suggests that the presence or absence of coronal spines is not be a reliable criterion for genera.

Acknowlegements

I wish to express my cordial thanks to Mr. M.R. HONEY and other staff of the Macrolepidoptera section of the British Museum (Natural History) for their kindness during my stay. I thank Mr. S. SUGI, Tokyo and Dr. K. UEDA of Kitakyushu Museum of Natural Histry for their kind advice and valuable specimens. I am indebted to Dr. M.J. SHARKEY of Biosystematics Research Institute, Agriculture Canada, Ottawa, Ontario, Canada, for his critical reading of the manuscript of this paper. I am grateful to Dr. M. OWADA of the National Science Museum, Tokyo, for the loan of many valuable specimens from the Philippines and Nepal. My cordial thanks are also due to Dr. D. STÜNING of Zoologisches Forschungsinstitut und Museum Alexander Koenig,

Bonn, for the loan of many valuable specimens from China. I am grateful to Dr. V.S. KONONENKO of Institute of Biology & Pedology, Far Eastern Branch of the Academy of Science, Vladivostok, U.S.S.R., for his kind information and valuable material. I am much indebted to the following persons who joined the Lepidopterological expeditions of the University of Osaka Prefecture to Thailand from 1981 to 1987; Dr. H. KUROKO and Dr. S. MORIUTI (Univ. of Osaka Prefecture); Dr. T. SAITO (Entomological Museum, Osaka Prefectural Minoo Park, Osaka); Dr. Y. ARITA (Meijo University); Dr. Y. YOSHIYASU (Kyoto Prefectural University) for the loan of many valuable specimens from Thailand. My cordial thanks are also due to Dr. K. KAMIMURA (Toyama Medical and Pharmaceutical University) and other staff who joined the Zoogeographical studies on the medical important Diptera in Southwest Asia for the loan of valuable specimens from Pakistan. To the following persons I am thankful for their kindness in lending valuable material; Miss I. HATTORI and Mr. K. KONISHI (National Institute of Agro-Environmental Sciences), Mr. M. MIYAZAKI (National Institute of Sericultural and Entomological Science), Dr. M. HAYASHI (Saitama University), Mr. S. SAITO & Mrs. A. SAITO (Chiba), Dr. N. KÔDA (Nanzan University), Dr. K. YAMAGISHI (Meijo University), Mr. I. KANAZAWA (Osaka Museum of Natural History), Dr. T. HIROWATARI (University of Osaka Prefecture), Mr. Y. YOSHIDA (Hyogo) and Mr. K. SETOYA (Oita).

References

BREMER, O., 1861. Neue Lepidopteren aus Ost-Sibirien und en Amur-lande, gesammelt von RADDE un MAACK. *Bull. Acad. imp. Sci. St. Petersb.* **3**: 484－485.

————1864. Lepidopteren Ost-Sibiriens, insbesondere des Amur-landes gesammelt von den Herren G. RADDE, R. MAACK, und P. WULFFIUS. *Mem. Acad. Sci. St. Petersb* (7)8 (1): 48, pl. v, fig. 8.

CALORA, F.B., 1966. A revision of the species of the *Leucania*-complex occurring in the Philippines. *Philippine Agriculturist* **50**: 633－728, 92 figs.

HAMPSON, G., 1894. *The Fauna of British India, including Ceylon and Burma.* Moths **2**: 273.

————1905. *Catalogue of the Lepidoptera Phalaenae in the collection of the British Museum*, Vol. **5**: 525, 526, 566.

HOLLOWAY, J.D., 1976. *Moths of Borneo with special reference to Mt. Kinabalu*: 9, fig. 46, Kuala Lumpur. Malayan Nature Society.

————1989. The Moths of Borneo: Family Noctuidae, trifine subfamilies: Noctuinae, Heliothinae, Hadeninae, Acronictinae, Amphipyrinae, Agaristinae. *Malayan Nat. J.* **43**: 86－87, pl. 2, figs 87 & 88.

INOUE, H. and S. SUGI, 1958. *Check List of the Lepidoptera of Japan* Part 5: 471－472.

International Commission for Zoological Nomenclature, 1985. *International Code of Zoological Nomenclature.* Third edition: 111, 113, London.

LEECH, J.H., 1900. Lepidoptera Heterocera from Northern China, Japan and Corea Part 3. *Trans. Ent. Soc. Lond.* **1900**: 124－125.

MOORE, F.Z.S., 1881. Descriptions of new genera and species of Asiatic nocturnal Lepidoptera. *Proc. Zool. Soc. Lond.* **1881**: 338.

POOLE, R.W., 1989. *Lepidopterorum Catalogus* (New Series). **118** Noctuidae. Part 1－Part 3, E.J. Brill.

SUGI S., 1982. Noctuidae. *In* INOUE, H. *et al.*, *Moths of Japan* **1**: 717, **2**: 358, pls. 177: 10, 361: 14.

SWINHOE, C., 1902. New and little-known species of eastern and Australian moths. *Ann. Mag. Nat. Hist.* (7) **10**: 50.

WARREN, W., 1910. *In* SEITZ, *Macrolepid. World* **3**: 100, pls. 24 c & 25 f.

————1913. *In* SEITZ, *Macrolepid. World* **11**: 95, pl. 12 i.

摘　　要

Aletia radiata (BREMER) とその近縁種（2新種を含む）について（吉松慎一）

Aletia radiata (BREMER) とその近縁種の整理を行った．これまでこのグループには4つの学名が適用されてきた．*Leucania radiata* BREMER, 1861, *Leucania abdominalis* MOORE, 1881, *Leucania moorei* SWINHOE, 1902, *Borolia stellata* HAMPSON, 1905である．

SWINHOE (1902)はオーストラリアからの*Nonagria abdominalis* WALKER, 1856 を *Leucania* に含めるべきだと考え，*Leucania abdominalis* MOORE, 1881 に対し*Leucania moorei*の名を提唱した．これら2種は，現在別属とされているが命名規約によると*moorei* SWINHOEが有効となる(条項59 b)．なお，CALORA (1966) はフィリピン産に対して*Aletia abdominalis* MOOREを適用している．

Borolia stellata は日本から記載されたが，井上・杉（1958），杉（1982）は*Aletia radiata stellata*として扱っている．KONONENKO博士より送られた*radiata*のタイプローカリティ（ウスリー）からの雄標本と*stellata*のタイプ標本の交尾器等を詳しく比較した結果，*stellata*を*radiata*のシノニムとして扱うべきだと考えた．

L. abdominalis MOORE はベンガルからの雌（大英博物館所蔵）に基づいて記載されたが，LEECH（1900），HOLLOWAY（1989）によると*radiata*のシノニムとして扱われた．しかし，タイプローカリティからの*moorei* と *radiata* の雄交尾器を比較することにより*moorei* は確かな種であることが判った．

本論文では*A. radiata, A. moorei* の再記載とフィリピンからの2新種（*A. honeyi* sp. nov., *A. intermediata* sp. nov.）の記載を行った．また*A. radiata* と *A. moorei* の分布を示した．*A. intermediata* sp. nov.と *A. moorei* は雄交尾器のcoronal spine の数がかなり減少しており，従来のようにcoronal spine の有無をキヨトウ類（*Leucania*-complex）の属を分ける際の基準の1つと考えることは妥当ではないかも知れないことを示唆した．

(Received 17 August 1989)

Published by the Lepidopterological Society of Japan, c/o Ogata Hospital, 3-2-17 Imabashi, Chuo-ku, Osaka, 541 Japan